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FREQUENCY, PREDICTORS, AND NATURAL HISTORY OF STENT EDGE DISSECTION: AN OPTICAL COHERENCE TOMOGRAPHY STUDY

Poster Contributions
Hall C
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Background: Optical coherence tomography (OCT) is a high resolution intravascular imaging modality that can detect post-stent complications with high sensitivity. Several small studies showed a significantly higher rate of stent edge dissection (SED) by OCT.

Method: From the MGH OCT registry, we evaluated 495 stents (975 stent edges). The underlying plaque morphology was compared between SED and non-SED group. We also evaluated the OCT predictors for SED. In a subset of subjects with a 6-month follow-up OCT study, natural history of SED was studied.

Results: 559 fibrotic plaques, 164 fibrocalcific plaques and 212 lipid-rich plaques were identified at stent edges. SED was detected in 17.1% of plaques. The incidence of dissection was similar between proximal and distal stent edge (50.3% and 49.7%, P=0.92). At the stent edge, fibrotic plaque was significantly less frequent in SED group than in non-SED group (24.0% vs. 69.2%, P<0.001), whereas fibrocalcific plaque and lipid-rich plaque were significantly more frequent in the SED group (35.3% vs. 13.0%, P<0.001 and 40.7% vs. 17.8%, P<0.001, respectively). In the 212 lipid-rich plaques, the average minimal fibrous cap thickness was significantly thinner in the SED group (97 μm vs. 193 μm, P<0.001) and the average of lipid arc was significantly larger (181.7° vs.136.3°, P<0.001). Logistic regression model showed fibrous cap thickness ≤ 120 μm and lipid arc > 138° were the best cut-off values predicting SED on a lipid-rich plaque (AUC 0.874, P < 0.001 and AUC 0.755, P < 0.001). In a subset of 79 patients who had 6-month follow-up OCT (111 stents, 39 edges in SED group and 158 in non-SED group), majority of SEDs were healed with persistent SED found only in 3 cases. Neointima within 5 mm from stent edge was significantly thicker in SED compared to non-SED group (293 μm vs 182 μm, P=0.004).

Conclusion: SED is more frequently seen in the lipid-rich and fibrocalcific plaque than in fibrous plaque. Thinner fibrous cap and larger lipid arc in lipid-rich plaque are predictors of SED. SED may lead to aggressive neointimal hyperplasia at the stent edge.